APPENDIX C

Lakes and Channels

1 GENERAL

This Appendix deals with the Lake and Channel data used to develop the hydraulic model (MIKE11).

Table 2-1 contains a list of data files and utility programs that were used to develop the rainfall data used in the model.

Establishing a MIKE11 hydraulic model require a number of steps including 1) definition of channel/lake network and 2) establishment of channel and lake cross-sections.

1.1 MIKE11 Network File (NWK11 file)

The first step when building a MIKE11 model is to define the lake and channel network file. This file contains all information required to link individual branches into a branch network. The network file also contains information on hydraulic control structures etc. Figure 1-1 shows a screen-dump of the MIKE11 network editor from where the hydraulic model is operated. The figure also shows the lakes, channels and streams included in the hydraulic model.

The river network was digitized based on a stream GIS shp-file provided by SFWMD and subsequently exported to a nwk11 file using MIKE SHE's GIS toolbox.

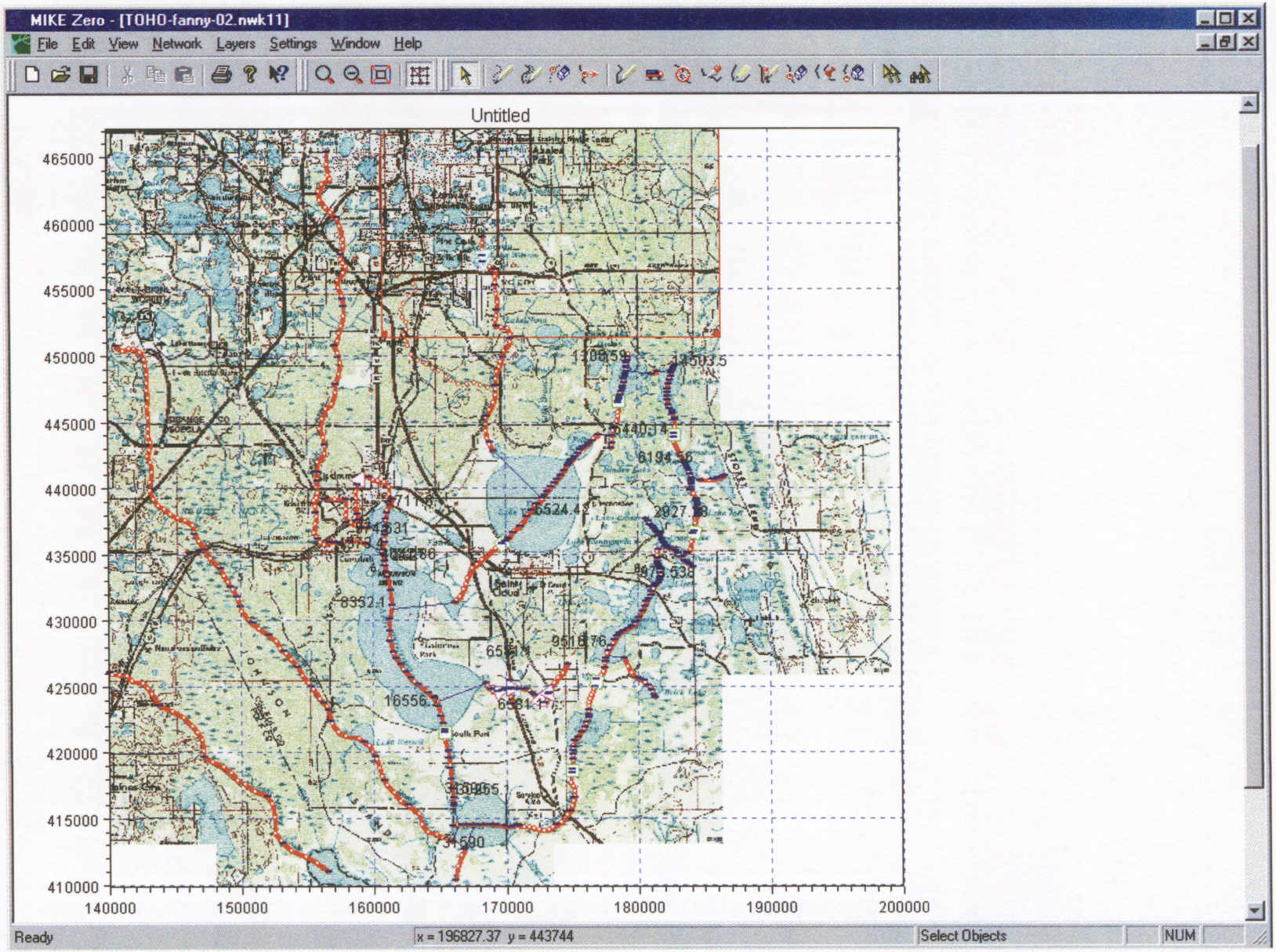

Figure 1-1 The MIKE11 Network Editor (Red line: Branch center line, Blue box: cross-section, Green diamond: Gate, Purple triangle : Culvert or Weir)

2 ROSS SECTIONS

For Boggy Creek, Shingle Creek and Reedy Creek longitudinal profiles containing bottom elevation and flood profiles were available from FEMA flood insurance studies and from a Basin Planning study carried out by URS Greiner (FEMA, 1981 and URS Greiner, 1998). Surveyed cross-sections were generally not available and representative model cross-sections have been estimated. The longitudinal profiles were used to establish the correct bottom elevation for the model cross-sections.

For Fanny Bass Creek detailed surveyed cross-sections and culvert/weir geometry were available from an SFWMD survey carried out in 1999 as part of the Lake Toho drawdown preparations. Cross-section/bathymetry data for Fanny Bass Pond were not available.

For the major canals, construction cross sections (as built) were available from plots (US Army Corps of Engineers, Jacksonville)

For the major lakes in the area US Army Corps of Engineer bathymetry maps were available. These maps were scanned, geo-referenced and digitized using ArcView GIS. Subsequently, MIKE11 GIS were used to develop a DEM (Digital Elevation Model) for each of the lakes and to extract cross-sections from the DEM. An example of a DEM for Lake Toho is shown in Figure 2-1. Typically, on the order of 20-30 cross sections were extracted for each lake providing a reasonable approximation of the storage-elevation characteristics for the lakes. Figure 2-2 shows an example of a Lake Toho cross-section extracted form the DEM.

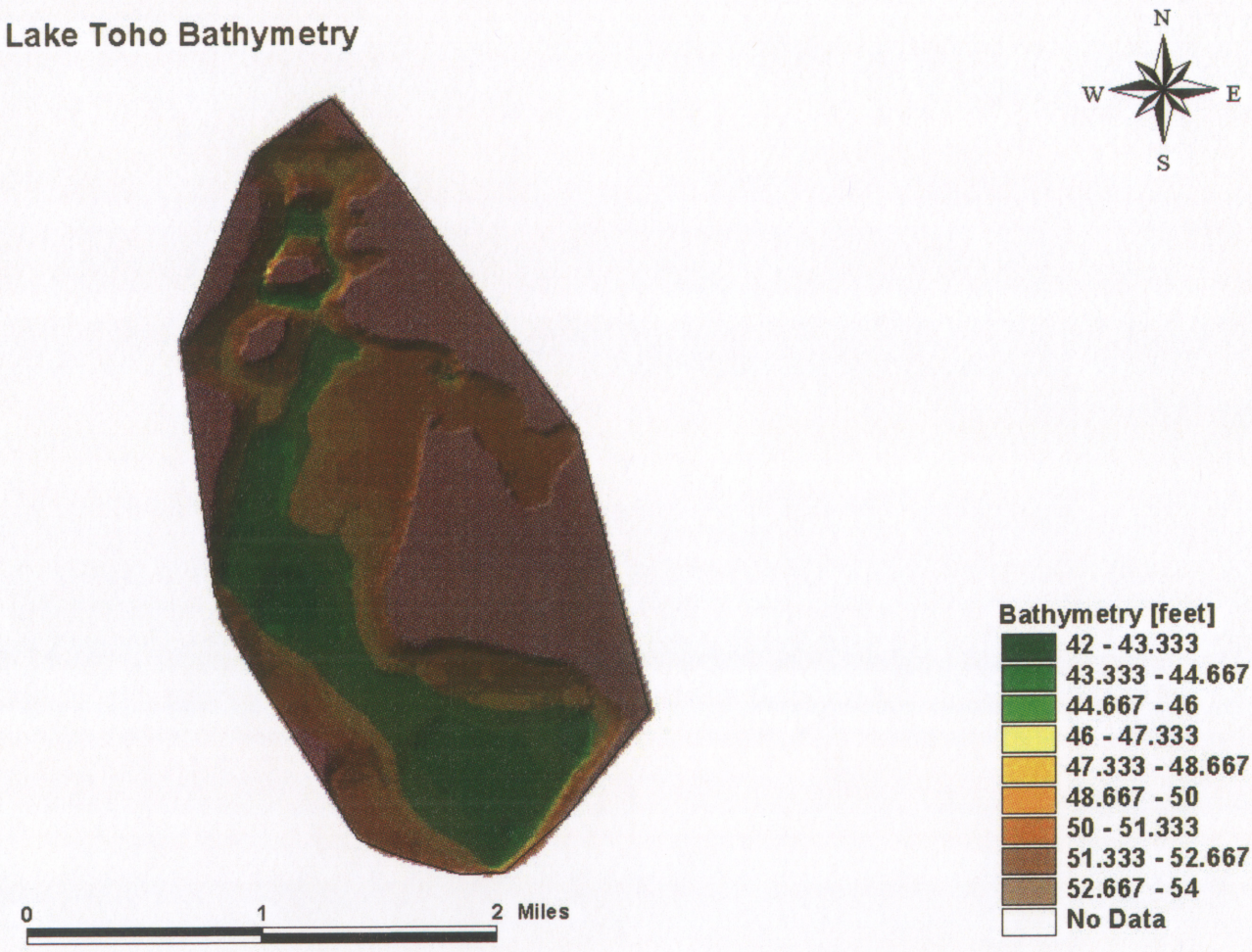

Figure 2-1 Lake Toho Bathymetry Digitized and Interpolated from US Army Corps of Engineers Bathymetry Maps.

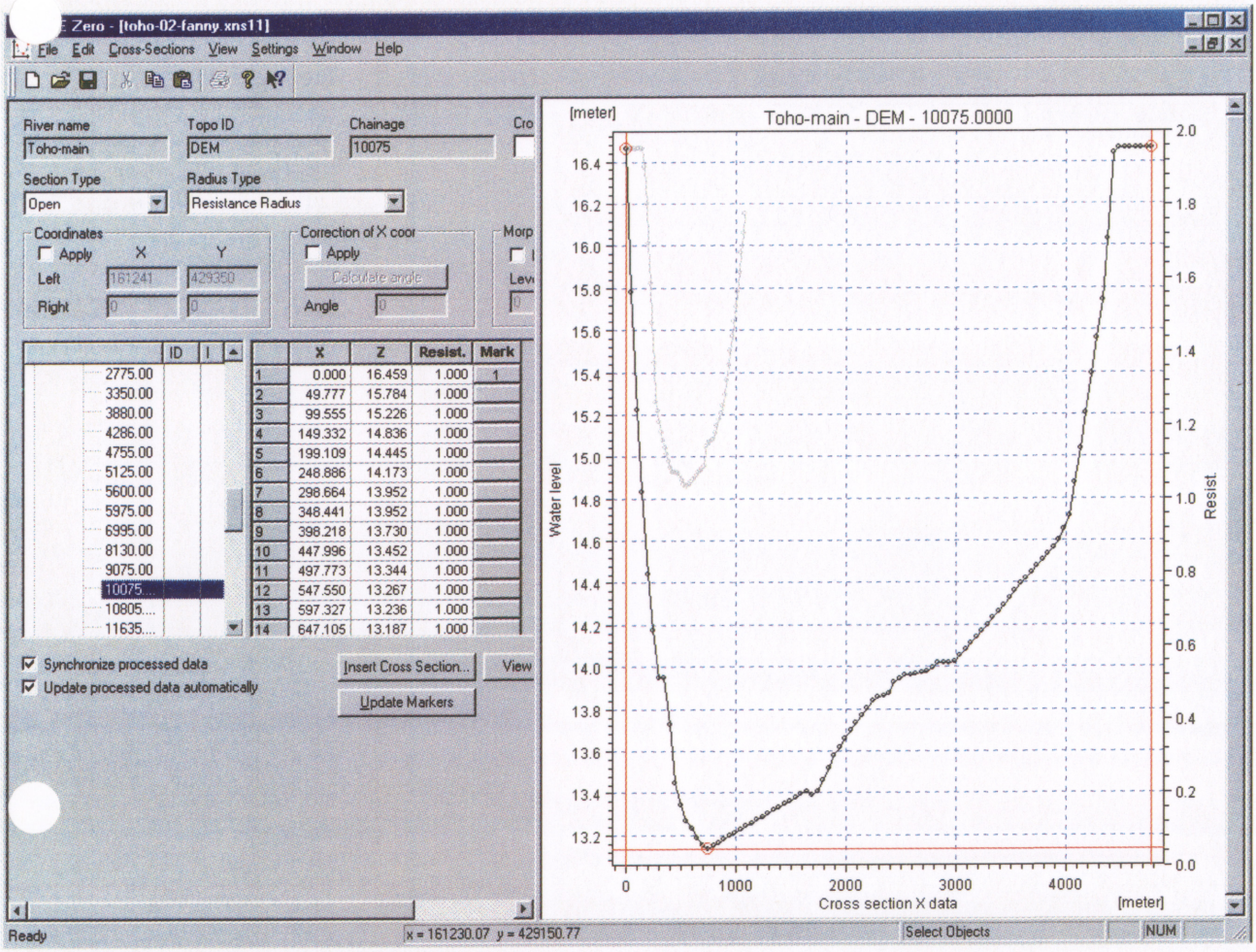

Figure 2-2 Screen-dump from the MIKE11 Cross Section Edtior showing and Example of a Lake Toho Cross-section Extracted from the DEM.

2.1 Data and Programs Used for ET and Rainfall Processing

Table 2-1 List of Data Files and Utility Programs Used to Develop Rainfall Data

Description	Data File on Project CD-ROM	Comments/file type
Lake Bathymetry data	GIS\bathymetry.apr	ArcView GIS project file with links to bathymetry shp files.
Cross sections	MIKE11\toho-02-fanny.xns11	MIKE11 cross section file used for all hydraulic models.
Network file, Regional Model	MIKE11\toho-she-fanny-01.nwk11	MIKE11 network file for regional hydraulic model
Network file, Fanny Bass Pond	MIKE11\toho-fanny-	MIKE11 network file for local

del	MIKE11\local.nwk11	Fanny Bass Pond model
Stage data	MIKE11\stagedata*.dfs0	Time-series files with recorded stage data in dfs0 format
Flow data	MIKE11\flowdata*.dfs0	Time-series files with recorded flow data in dfs0 format
Simulation files	MIKE11*.sim11	Various simulation files used for calibration, validation and scenario simulations. Simulation files contain file references to all other data files used in a specific simulation.

3 REFERENCES

FEMA, 1981. Flood Insurance Study, Osceola County, Florida, Unincorporated Areas, Community Number 120189, August 3, 1982

URS Greiner, 1998, Basin Planning for Boggy Creek and Lake Hart Watersheds, Final Report, June 1998.